

Ex 3.1

$$a) \lim_{x \rightarrow +\infty} \frac{3x^3 - 5x^2 + 7}{8 + 2x - 5x^3} \stackrel{\text{"8/8"}}{=} \lim_{x \rightarrow +\infty} \frac{3x^3}{-5x^3} = \lim_{x \rightarrow +\infty} \frac{-3}{5} = \underline{\underline{-\frac{3}{5}}}$$

$$b) \lim_{x \rightarrow +\infty} \frac{x^2 - 2}{x - x^2} \stackrel{\text{"8/8"}}{=} \lim_{x \rightarrow +\infty} \frac{x^2}{-x^2} = \lim_{x \rightarrow +\infty} -1 = \underline{\underline{-1}}$$

$$c) \lim_{x \rightarrow +\infty} \frac{x^3 + 2}{x^2 + 3} = \lim_{x \rightarrow +\infty} \frac{x^3}{x^2} = \lim_{x \rightarrow +\infty} x = \underline{\underline{+\infty}}$$

$$d) \lim_{x \rightarrow -\infty} \frac{(3x + 4)(x - 1)}{(2x + 7)(x + 2)} = \lim_{x \rightarrow -\infty} \frac{3x^2}{2x^2} = \lim_{x \rightarrow -\infty} \frac{3}{2} = \underline{\underline{\frac{3}{2}}}$$

$$e) \lim_{x \rightarrow -\infty} \frac{2 - x^2}{x^2 - 32} = \lim_{x \rightarrow -\infty} \frac{-x^2}{x^2} = \lim_{x \rightarrow -\infty} -1 = \underline{\underline{-1}}$$

$$f) \lim_{x \rightarrow -\infty} \frac{2x^2 - 5x - 3}{3x^3 + 7x + 9} = \lim_{x \rightarrow -\infty} \frac{2x^2}{3x^3} = \lim_{x \rightarrow -\infty} \frac{2}{3x} = \frac{2}{-\infty} = \underline{\underline{0}}$$

$$g) \lim_{x \rightarrow -\infty} \frac{x^3 - 3}{5 - 3x} = \lim_{x \rightarrow -\infty} \frac{x^3}{-3x} = \lim_{x \rightarrow -\infty} \frac{x^2}{-3} = \frac{+\infty}{-3} = \underline{\underline{-\infty}}$$

$$h) \lim_{x \rightarrow +\infty} \frac{x}{3x^2 - x + 2} = \lim_{x \rightarrow +\infty} \frac{x}{3x^2} = \lim_{x \rightarrow +\infty} \frac{1}{3x} = \frac{1}{+\infty} = \underline{\underline{0}}$$

$$i) \lim_{x \rightarrow -\infty} \frac{4 - x^2}{x + 2} = \lim_{x \rightarrow -\infty} \frac{-x^2}{x} = \lim_{x \rightarrow -\infty} -x = \underline{\underline{+\infty}}$$

$$j) \lim_{x \rightarrow +\infty} \frac{x^4}{2x^2 - 5} = \lim_{x \rightarrow +\infty} \frac{x^4}{2x^2} = \lim_{x \rightarrow +\infty} \frac{x^2}{2} = \frac{+\infty}{2} = \underline{\underline{+\infty}}$$